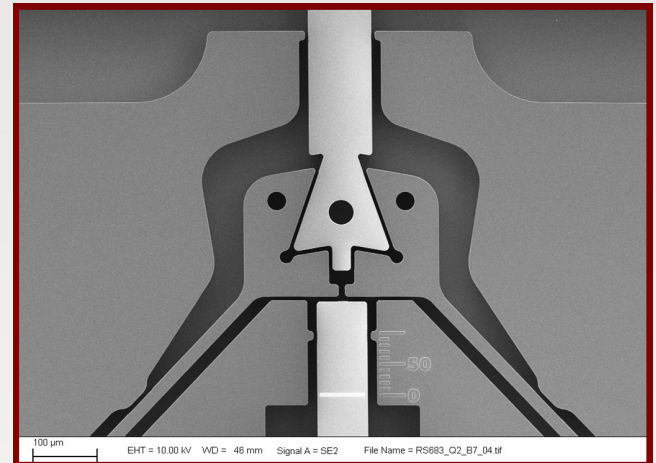


TECHNOLOGY SUMMARY

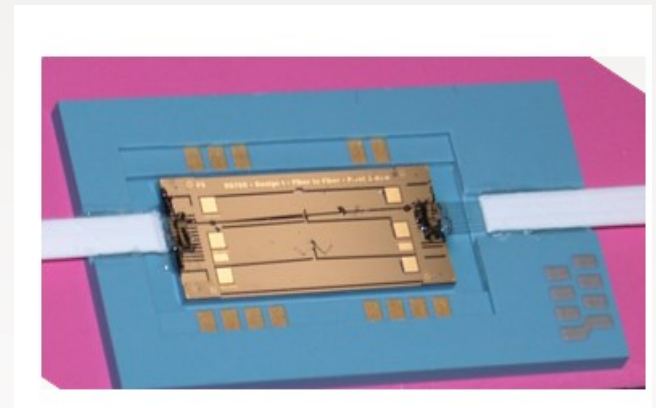
US PATENT # 8,447,148

Sandia National Laboratories has developed a latching switch for optical fibers. One or more fibers are moved by an actuator between two positions, off and on. In the off position, two fiber ends are not aligned and light does not pass from the first fiber to the second. In the on position, the ends of two fibers are precisely aligned to make a low-loss optical connection. The fibers are robustly held in place by mechanical latches in both positions to prevent them from unintentional movement due to shock and vibration.



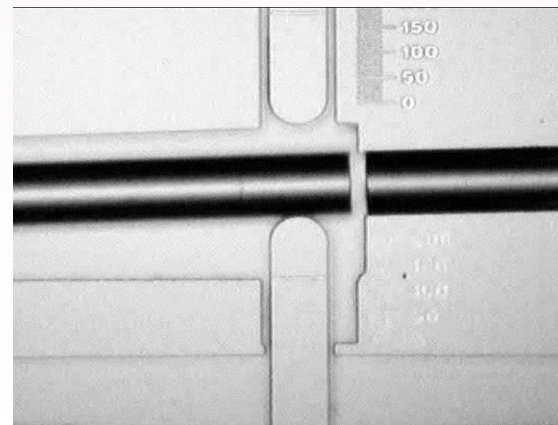
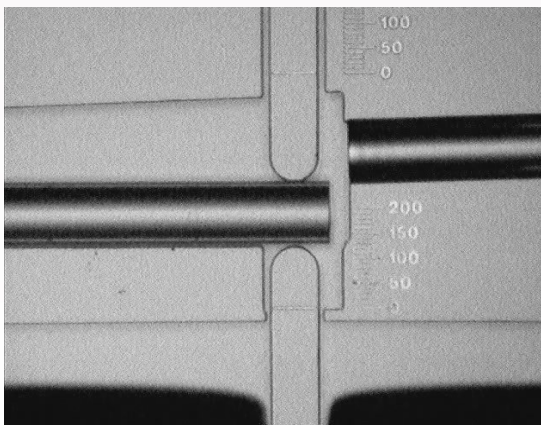
**Figure 1. SEM Image of
latching mechanism**

Power is not required to hold the fibers in either position. The power required to switch between on and off is low due to the micro-fabrication techniques used to create the linear actuator that aligns the fibers and the latching mechanism. Micro-fabrication also results in a small switch that will have many commercial and defense applications.



**Figure 2. Latching Micro Optical Switch
with 3 Linear Actuators**

**Figure 3. Left:
125 micron
diameter
optical fiber
unlocked
Right: Fiber
Locked Into
Position**



APPLICATIONS AND INDUSTRIES

- Aircraft and Aerospace
- Communications
- Electronics
- Industrial Machinery
- Medical Devices
- Microelectronics
- Transportation and Automotive

TECHNOLOGICAL BENEFITS

- Smaller Scale
- Reduced Cost
- Withstands severe mechanical environments
- Can be fabricated using a variety of techniques, including DRIE, LIGA or other bulk micromachining

TECHNOLOGY READINESS LEVEL

Sandia estimates this technology to have a technology readiness level of approximately 4. Key elements of this technology have been demonstrated in laboratory environments.

CONTACT INFORMATION

For more information or to discuss licensing opportunities contact us at :

ip@sandia.gov

Refer to SD # 10808

Or to learn more, please visit our website at

<https://ip.sandia.gov>.

